Lowman, Idaho, Disposal Site

Long-Term Surveillance and Maintenance Program

U.S. Department of Energy
Grand Junction Office

FACT SHEET

The Grand Junction Office has provided cost-effective and efficient stewardship for more than 10 years

Overview

From 1955 to 1960, sands rich in rare earth elements and uranium were dredged along Bear Creek in Bear Creek Valley, north-central Idaho, and hauled 18 miles south to the mill near Lowman, Idaho. The milling operations at Lowman created process-related waste and residual sands containing radioactive materials and other contaminants. The U.S. Department of Energy (DOE) encapsulated the contaminated materials in an engineered disposal cell in 1992.

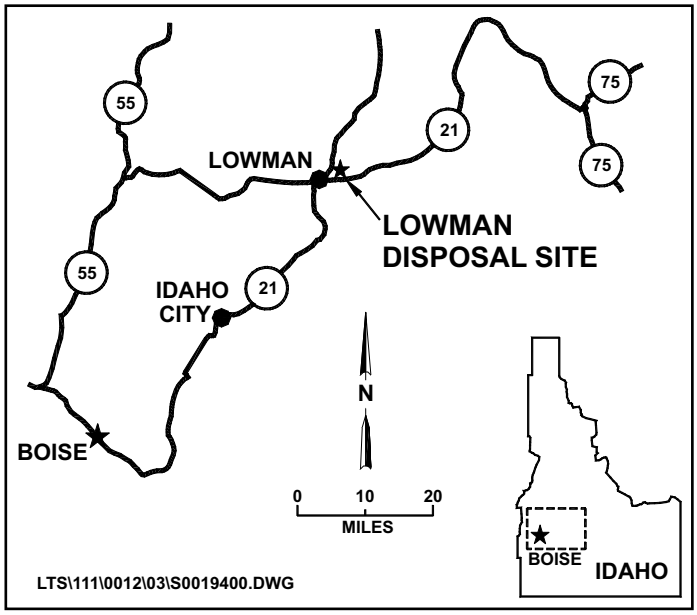
The U.S. Nuclear Regulatory Commission included the Lowman Disposal Cell under general license in 1994. DOE is responsible, under the general license, for the long-term custody, monitoring, and maintenance of the site. The DOE Long-Term Surveillance and Maintenance (LTSM) Program at the DOE Grand Junction (Colorado) Office is responsible for the long-term safety and integrity of the disposal site.

DOE established the LTSM Program in 1988 to provide stewardship of disposal cells that contain low-level radioactive material after environmental restoration activities are complete. The mission of the LTSM Program is to ensure that the disposal cells continue to prevent release of contaminated materials to the environment. These materials will remain potentially hazardous for thousands of years. As long as the cells function as designed, risks to human health and the environment are negligible.

The LTSM Program maintains the safety and integrity of the disposal cell through periodic monitoring, inspections, and maintenance; serves as a point of contact for stakeholders; and maintains an information repository at the DOE Grand Junction Office for sites in the LTSM Program.

Regulatory Setting

Congress passed the Uranium Mill Tailings Radiation Control Act in 1978 (Public Law 95–604) that specified remedial action for 24 inactive millsites where uranium was produced for the Federal Government. DOE remediated these sites under the Uranium Mill Tailings Remedial Action Project and encapsulated the radioactive material in U.S. Nuclear Regulatory Commission-approved disposal cells. Cleanup standards were promulgated by the U.S. Environmental Protection Agency in Title 40 *Code of Federal Regulations* (CFR) Part 192. The NRC license was issued in accordance with 10 CFR 40.

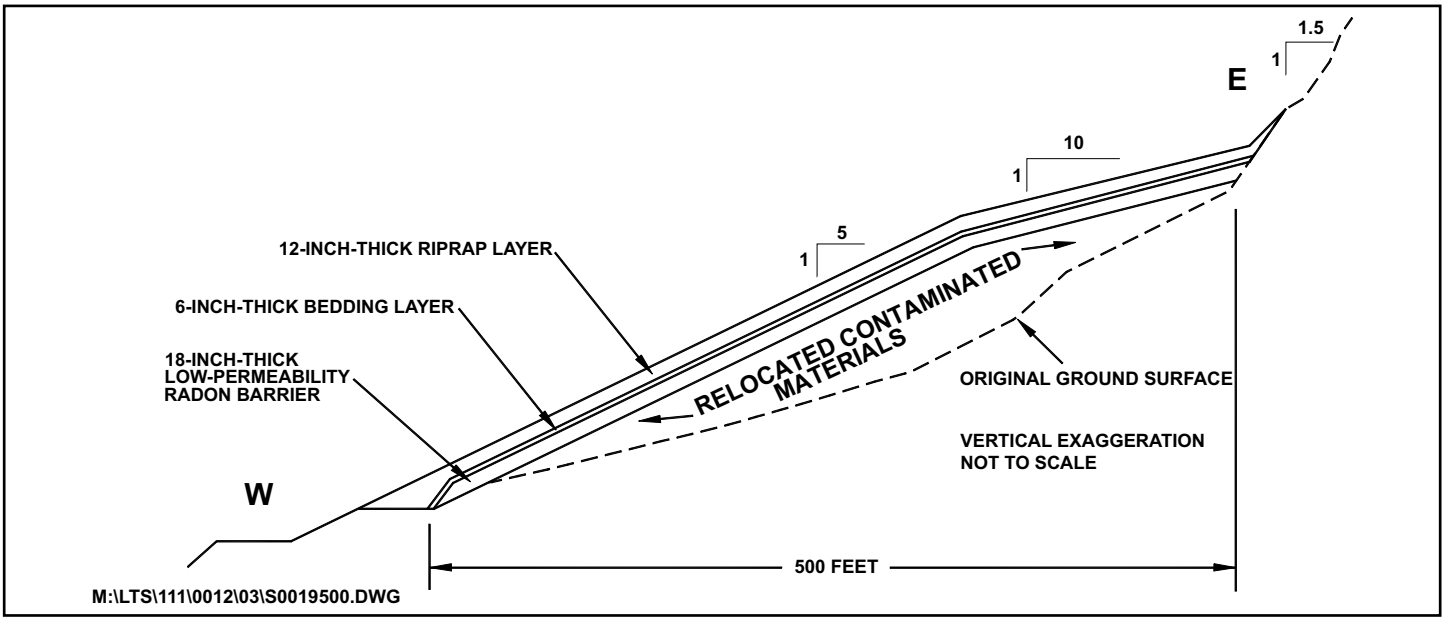


Lowman Disposal Site

The Lowman Disposal Site is located in Boise County, Idaho, approximately 73 miles northeast of Boise and 0.5 mile northeast of the village of Lowman. It is bounded on the south by State Highway 21, on the west by Clear Creek, and on the north and east by U.S. Forest Service land. The land surrounding the site is mountainous and heavily forested and is used for recreation, grazing, logging, and mining.

The site is situated on terrace deposits 80 feet above Clear Creek. These deposits consist of approximately 45 feet of unconsolidated alluvium underlain by weathered granodiorite bedrock. Depth to groundwater beneath the site is between 27 and 78 feet. Groundwater flows west-southwest along the alluvium/bedrock contact and within a preferential flow path created by a paleochannel. Site groundwater has not been contaminated by processing or disposal operations.

Porter Brothers Corporation operated the Lowman mill between 1955 and 1960. Columbite/euxenite and monazite concentrates were physically separated from placer ore dredged from Bear Creek. Velsicol Chemical Corporation subsequently purchased the site. When the



West-East Cross Section of Lowman Disposal Cell

mill closed, radioactive sands with low-leachability characteristics remained in piles at the millsite. Remedial action included consolidation of the sand piles, contaminated millsite debris, and materials from approximately 30 contaminated off-site or "vicinity" properties in an engineered disposal cell. The disposal cell was completed in 1992. The disposal cell contains 222,230 dry tons of contaminated materials with a total activity of 12 curies of radium-226.

Cell Design

The Lowman Disposal Cell occupies 8.2 acres of the 18.1-acre site. Site access is restricted by a locked gate across the entrance road. The site perimeter is marked with warning signs and permanent boundary monuments.

In the disposal cell, the sand and other contaminated materials were compacted and covered with a layer of compacted soil, which serves as a radon barrier. The radon barrier prevents the escape of radon gas from the tailings and the penetration of water into the cell. The radon barrier layer was covered with a layer of free-draining, sandy bedding material and then with a layer of rock (riprap) for erosion protection. The cell design promotes rapid runoff of precipitation to minimize leachate. A rock apron was placed around the cell to further protect against erosion and to direct runoff water away from the cell.

LTSM Program Activities

The LTSM Program manages the site according to a long-term surveillance plan (LTSP) prepared specifically for the Lowman site. Under provisions of the LTSP, the LTSM Program (1) conducts annual inspections of this site to evaluate the condition of surface features, (2) performs site maintenance as necessary, and (3) continues to monitor groundwater. In 1998, DOE completed an erosion-control project to reclaim land north of the disposal cell.

The disposal cell at Lowman is designed and constructed to last for 200 to 1,000 years. However, the general license has no expiration date, and DOE understands
that its responsibility for the safety and integrity of the Lowman site will last indefinitely.

Contacts

For more information about the LTSM Program or about the Lowman Disposal Site, contact

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http://www.doegjpo.com/programs/ltsm